UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MEMORANDUM

SUBJECT: Field Report of Site Visit April 14, 2022
Bluestone Coke LLC,
Birmingham, Alabama
EPA ID No. ALD 000 828 848

FROM: James H. Smith, Corrective Action Specialist, RCAS James H. Smith Digitally signed by James H. Smith Date: 2022.04.29 14:53:31 -04'00'

THRU: David Egetter, Chief, RCAS David Egetter Digitally signed by David Egetter Date: 2022.07.06 12:23:27 -04'00'

TO: File

PURPOSE

Visit Bluestone Coke facility in Birmingham, Alabama, to review the Corrective Measures Implementation (CMI) pilot study for SWMU Management Area (SMA) 4 - Former Chemical Plant (In Situ Chemical Oxidation and Groundwater Hydraulic Containment System). Also, to ground truth the environmental and operational conditions of SMA 3 - Coke Manufacturing Plant. EPA is reviewing Corrective Measures Study (CMS) for SMA 3 response to comments and revised CMS dated 10/21/2021. Also, to visit SMA 1-BTF Process Areas and Sewers.

PERSONNEL

Terri Rippenstein, TerraCon
Don Wiggins, Bluestone Coke
James Smith, EPA

SWMU MANAGEMENT AREA (SMA) 4 - FORMER CHEMICAL PLANT

The Former Chemical Plant (FCP) SMA 4 consists of 14 SWMUs and Areas of Concern (AOCs). The FCP is completely demolished with some concrete visible. Large areas have grass and weed covered dirt placed over the former process area. The approved pilot study consists of applying In Situ Chemical Oxidation (ISCO) amendments through two horizontal wells 8-10 feet below the ground completed in the vadose zone soils under the concrete foundation of the former Chemical Plant (Figure 1). The injection well ports are located on each end of the horizontal wells. The wells are 260 feet long and perforated so-as-to distribute amendments RegenOx® and Petrocleanz™ along the length of the treatment area. Chemicals such as RegenOx® and Petrocleanz™ are injectable, two-part ISCO reagents

that combines a solid sodium percarbonate based alkaline oxidant (Part A), with a liquid mixture of sodium silicates, silica gel and ferrous sulfate (Part B), resulting in a powerful contaminant destroying technology. The amendments oxidize benzene, chlorobenzene, and toluene in the soil and groundwater.

The amendments were injected and recovered on October 13, 2020, and January 26, 2021. This is the first of two injection events or phases. The second phase was to follow immediately after the Phase I. The second phase injection did not occur due to lack of funding. Confirmatory sampling near the point of injection would determine the efficacy of a full-scale application through four horizontal wells.

Groundwater remedy is hydraulic containment and treatment of groundwater in the Biological Treatment Facility (BTF) (Figure 2). During the pilot study the hydraulic containment system has been temporarily shut down so-as-to prevent recovery of ISCO amendments. Six recovery wells contain the groundwater and have demonstrated a reduction in benzene in perimeter wells. Groundwater monitoring consists of Upgradient Wells: MW-77, MW-80 and MW-81, Performance Wells: MW-49S, MW-49D, MW-50, MW-51, MW-52, MW-53, MW-54, MW-55, MW-56, MW-78, and MW-90, and Sentinel Wells: MW-70, MW-71, MW-72, and MW-89.

Full-scale application would include five additional horizontal wells and fifteen direct push points injecting amendments of Regenesis PlumeStop® Liquid Activated Carbon™ along a transect perpendicular to groundwater flow at the facility boundary to prevent groundwater from leaving the facility boundary (Figure 3).

References: CMI Work Plan SMA 4-Former Chemical Plant Revision 1 dated 9/7/2018.
Underground Injection Control Permit Application SMA 4-Former Chemical Plant dated 9/7/2018.

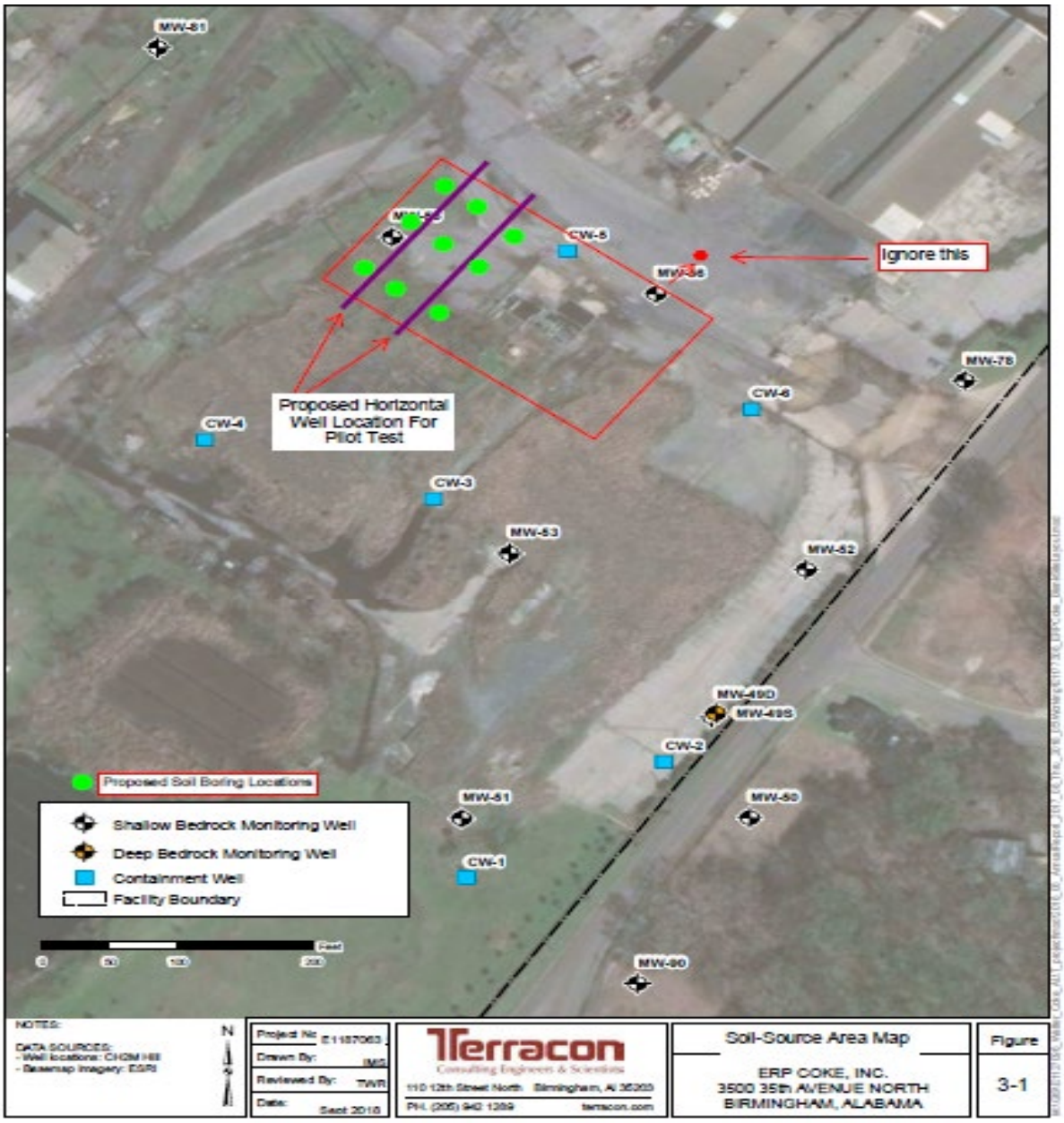

Figure 2 Horizontal Wells Pilot Study for ISCO.

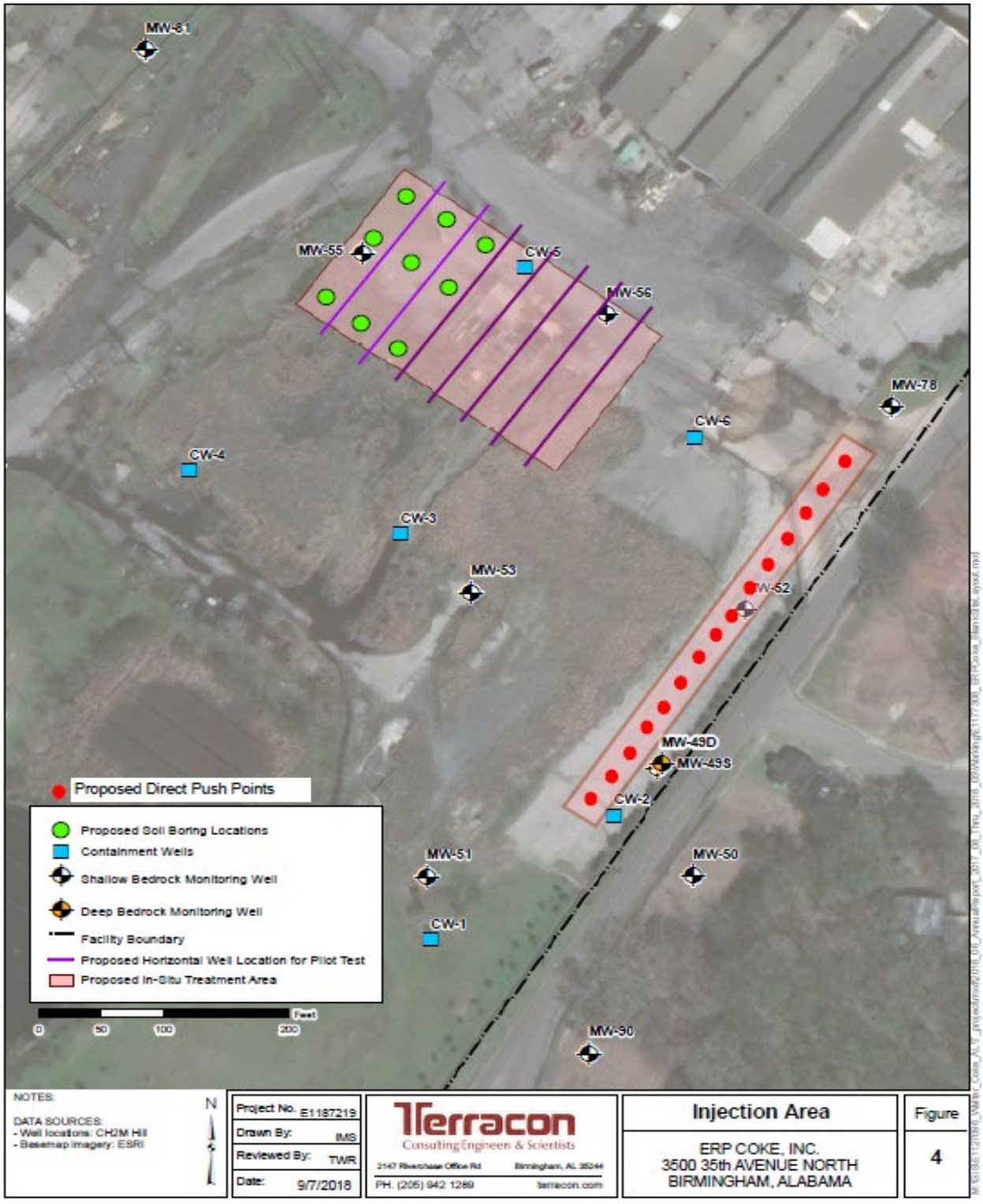

Figure 3 UIC Application Figure for Full-Scale application of ISCO amendments.

Plate 1 Horizontal Injection Well (black pipe with white cap).

Plate 2 Former Chemical Plant. Horizontal wells pass under parking lot and under dirt mound.

Plate 3 Horizontal Injection Well

SMA 3 Coke Plant Walk Through

The SWMU Management Area (SMA) 3 consists of 13-SWMUs, and Areas of Concern (AOCs) associated with Coke Plant (Figure 4). The SWMUs are distributed along the length of the Coke Batteries that consisted of 200 ovens covering an estimated distance of 3,000 feet (Plates 4 & 5). Groundwater and soils are contaminated from decanting operations and releases to surface soils. Coke operations in general is a dirty operation. Soils are black from coal dust and oil.

Coke operations have been suspended due to denial of an air permit by Jefferson County. Coke oven operations could not meet the air quality requirements. Don Wiggins met with Jefferson County officials in April and have a path forward for permit issuance. BSC is in the process of rebuilding Coke Oven doors (Plate 6).

The SWMUs and AOCs associated with the Coke Manufacturing were visited by walking and vehicle tour beginning northeast of the Coke Batteries to the southwest. SWMUs on the east side of the road that separates the coke ovens and decanters (Plate 4). The SWMUs were visited in the following order: SWMUs #11 (Plates 7 & 9), #10 (Plate 8), #12 (Coal Tar Decanters), SWMU 9 Flushing Liquor Decanter Sump, SWMU 7 Coal Tar Collection Sump, SWMU 8 Flushing Liquor Decanter, SWMU 5 Coal Tar Storage Area Drain System. On the west side of the road are the SWMU 3 Old Quench Tower Settling Basins, SWMU 2 Quench Tower Pump Basins, and SWMU 1 Quench Tower Sumps.

SWMU 6 Spill around Diesel Tank located behind Coke Ovens to the west. SWMU 37 BTF Sewer Tar Trap (Plate 10).

Proposed Final Remedy

EPA is a reviewing the SMA 3 Corrective Measures Study for final remedy determination. The proposed corrective measures consisted of Alternative 5 Land Use Controls + In-Situ Soil Source Area Treatment + Groundwater Removal and Treatment + Groundwater Monitoring. The Land Use Controls, In-Situ Soil Source Area Treatment, Groundwater Removal and Treatment, and Groundwater Monitoring alternative consists of a combination of technologies including administrative land use controls, in-situ injection to treat the soil source area, groundwater removal and treatment to reduce contaminant levels, and groundwater monitoring. This alternative would meet the corrective measure objectives by reducing and/or eliminating exposure to the affected site media (see Section 3.3) through injection of bacteria or chemicals to remove contaminants, removal of contaminants through groundwater extraction, and the development and implementation of a LUCP to protect future receptors in the unlikely event the land use changes. In addition, long term groundwater monitoring would ensure that the groundwater plume reaches the Corrective Action Objectives (CAOs).

Potential Pilot Study for applying ISCO the soil for polycyclic aromatic hydrocarbons (PAHs) and naphthalene and benzene include: SWMU 7, 8, and 9 which were across from the location of a past coke battery. SWMU 7-9 might have some contamination for a pilot (lacks groundwater monitoring wells), an area of interest that may also be a good candidate for a pilot study is in were areas where the groundwater data/Targost data showed more contamination. In Figure 5, the Targost area is delineated by pink polygon. This area is in the general area of wells MW-58, MW-59, MW-74, and MW-75. Figures 4-1 through 4-5 of RFI Phase III Report for the Targost information.

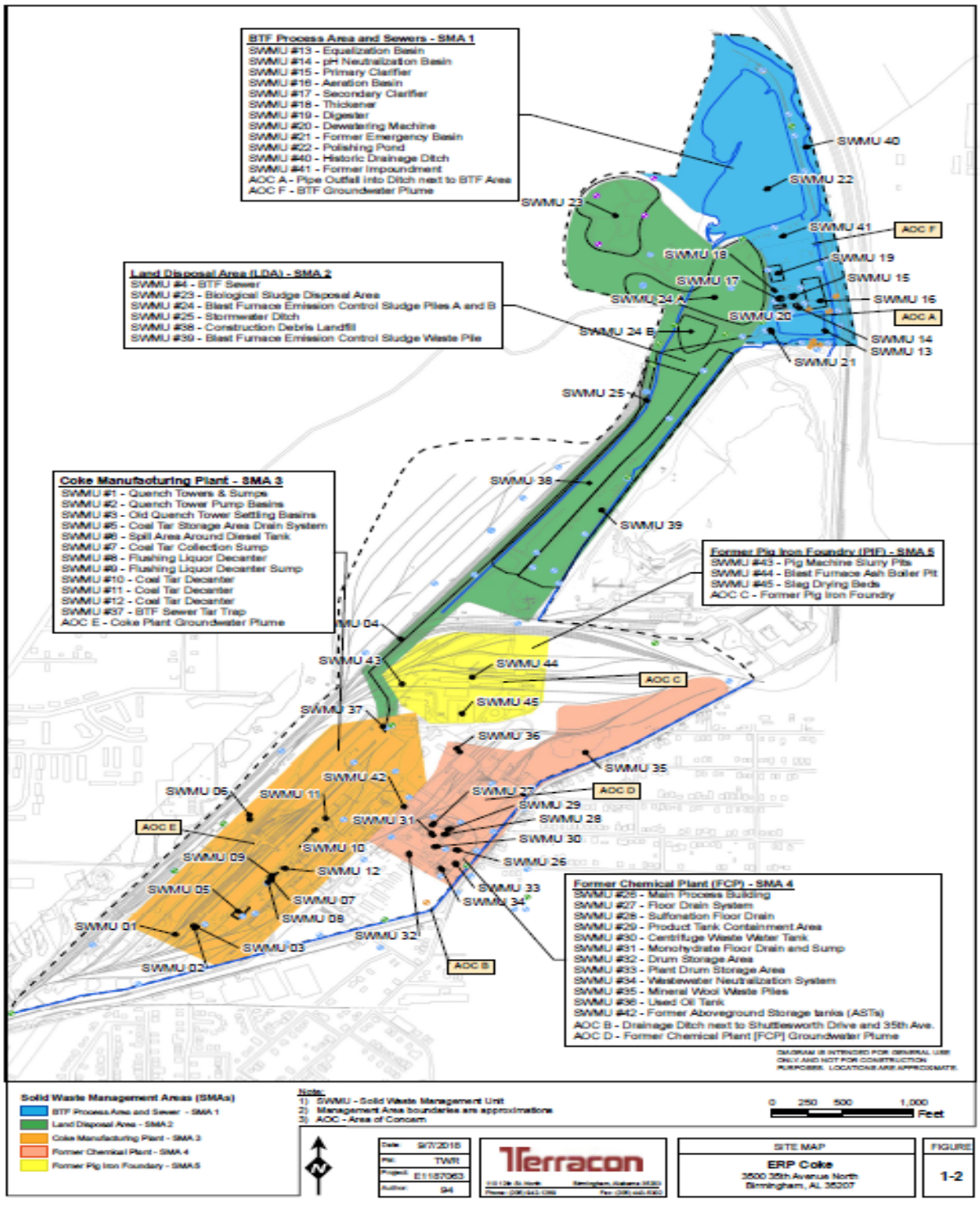

Figure 4 SMA Map

Figure 5 Potential Pilot Study Area


Plate 4 Coke Plant northeast view.

Plate 5 Coke Plant Coke ovens left and decanters on right.

Plate 6 Coke Oven Doors needing repair.

Plate 7 Coal Tar Decanter

Plate 8 Coal Tar Decanter Tar Sumps

Plate 9 Coal Tar Decanter

Plate 10 BTF Sewer Tar Trap